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Amendments to the Specification

Please replace paragraph [0022] with the following paragraph:

First plasma source 102 comprises a plasma chamber 104, a cathode 106, and an anode 108. Cathode 106 is disposed within, and extends into, plasma chamber 104. While a single cathode 106 is shown in Figure 1, it is understood that plasma source 102 may include multiple cathodes 106. Anode 108 is located at one end of plasma chamber 102. An exit port 118 provides fluid communication between plasma chamber 104 and second chamber 140. The substantially controllable plasma generated within plasma chamber 104 exits plasma chamber 104 through exit port 118 and enters second chamber 140. In one embodiment, exit port 118 may comprise an orifice formed in anode 108. In another embodiment, exit port may comprise at least one "floating" (i.e., electrically insulated from both cathode 106 and anode 108) cascade plate 122 separating anode 108 from the rest of plasma chamber [[102]] <u>104</u>. Alternatively, exit port 118 may be located in a floating wall in one of plasma chamber [[102]] <u>104</u> and second chamber 140.

Please replace paragraph [0023] with the following paragraph:

A gas for generating the plasma (hereinafter referred to as a "plasma gas") is injected into plasma chamber 104 through at least one plasma gas inlet 114. the plasma gas may comprise at least one inert or non-reactive gas, such as, but not limited to, a noble gas (i.e., He, Ne, Ar, Xe, Kr). Alternatively, in embodiments where the plasma is used to etch the surface, the plasma gas may comprise a reactive gas, such as, but not limited to, hydrogen, nitrogen, oxygen, fluorine, or chlorine. Flow of the plasma gas may be controlled by a flow controller <u>120</u>, such as a mass flow controller, located between a plasma gas source (not shown) and the at least one plasma gas inlet 114. A first plasma is generated within plasma chamber 104 by injecting the plasma gas into plasma chamber 104 through the at least one plasma gas inlet 114 and striking an arc between cathode 106 and anode 108. The voltage needed to strike an arc between cathode 106 and anode 108

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is provided by power source 112. In one embodiment, power source 112 is an adjustable DC power source that provides up to about 100 amps of current at a voltage of up to about 50 volts. Second chamber 140 is maintained at a second chamber pressure by a vacuum system (not shown), which is substantially less than a first plasma chamber pressure. In one embodiment, second chamber 140 is maintained at a pressure of less than about 1 torr (about 133 Pa) and, preferably, at a pressure of less than about 100 millitorr (about 0. 133 Pa), while plasma chamber 104 is maintained at a pressure of at least about 0.1 atmosphere (about 1.01×10^4 Pa). As a result of the difference between the first plasma chamber pressure and the second chamber pressure, the first plasma passes through exit port 118 and expands into second chamber 140.

Please replace paragraph [0035] with the following paragraph:

In those embodiments in which apparatus 100 includes more than one plasma source, second plasma source 202 includes features corresponding to those of first plasma source 102, which are described herein. For example, plasma source 202 includes cathode 206, anode 208, gap 210, at least one plasma gas inlet 214, <u>a flow controller 220,</u> at least one sensor 216, exit port 218, and cascade plate 222. The voltage needed to strike an arc between cathode 206 and anode 208 is provided by either power source 112 or a separate power source.

Please replace paragraph [0042] with the following paragraph:

An example of such tuning and detuning of the plasmas produced by multiple plasma sources is shown in ~~Figure 4~~ <u>Figure 5</u>. The profiles of a-Si_xC_y:H films deposited on a substrate by injecting vinyltrimethylsilane (VTMS) into plasmas generated by multiple ETP sources are plotted as a function of lateral position on the substrate. The film profiles correspond to the properties - such as, but not limited to, temperature, density, cross-sectional area, and reactant concentration - of the plasmas that are used to deposit the films. The squares in ~~Figure 4~~ <u>Figure 5</u> represent the film profile that is

obtained when the two sources that are detuned; i.e., operated at different plasma pressures and cathode voltages. The dissimilar plasmas produce a profile in which the thickness of the deposited exhibits a significant variation. The diamonds in ~~Figure 4~~ Figure 5 represent the film profile that is obtained when the pressures and voltages of the two sources have been tuned to be equal. The resulting profile exhibits less variation than that obtained using detuned plasma sources.